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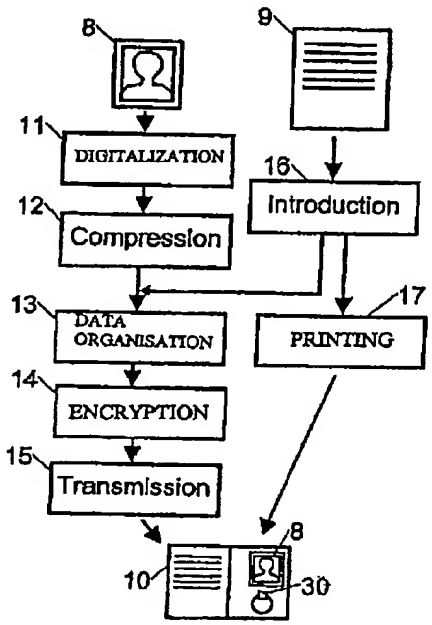
(54) Titre : PROCEDE POUR L'IDENTIFICATION SECURITAIRE D'UNE PERSONNE ET DISPOSITIF PORTATIF POUR LA MISE EN OEUVRE DU PROCEDE

(54) Title: METHOD FOR SECURE IDENTIFICATION OF A PERSON AND PORTABLE DEVICE IMPLEMENTING SAID METHOD



(57) Abrégé/Abstract:
The invention concerns a method which consists in affixing on a thin flexible paper or plastic identification support (10) assigned to a person, identification data concerning said person; fixing on the support (10) a thin electronic chip, comprising a storage and a contactless transmitter-receiver, for respectively transmitting stored data and receiving data to be stored in the storage; digitizing (11, 16), then encrypting (14) the data affixed on the identification support (10); transmitting (15) without contact the encrypted data to the receiver and storing them in the storage; and for each identification of the person, receiving through a reader of data stored in the memory of the chip (30) fixed on the support (10) assigned to the person, decrypting said data, and comparing them with data affixed on the support (10).

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ABSTRACT

The invention concerns a method which consists in affixing on a thin flexible paper or plastic identification support (10) assigned to a person, identification data concerning said person; fixing on the support (10) a thin electronic chip, comprising a storage and a contactless transmitter-receiver, for respectively transmitting stored data and receiving data to be stored in the storage; digitizing (11, 16), then encrypting (14) the data affixed on the identification support (10); transmitting (15) without contact the encrypted data to the receiver and storing them in the storage; and for each identification of the person, receiving through a reader of data stored in the memory of the chip (30) fixed on the support (10) assigned to the person, decrypting said data, and comparing them with data affixed on the support (10).

The present invention relates a method for identifying a person and a portable device for implementing said method.

It applies in particular, but not exclusively, to the embodiment of identity documents, such as passports and identity cards supplying various elements of information for identifying a person. This information generally includes information of the civil status of the person and a black and white or coloured identity photograph and possibly anthropometric information and the fingerprint of the forefinger of a hand.

Identity documents are currently produced via printing on a paper or boarded or plasticized paper. Despite all the precautions taken, such as the use of special papers, it is possible to falsify them by using relatively inexpensive means with relatively easy access.

The object of the present invention is to eliminate these drawbacks. To this effect, the invention offers a method for the security identification of a person and includes the affixing onto a thin flexible identification support, either made of paper or a plastic film, allocated to the person concerning identification information of said person and the reading of this information.

According to the invention, this method is characterised in that it includes :

- fixing onto the identification support a thin electronic chip including no-contact storage means and transmission and receiving means respectively so as to transmit the stored information and receive the information to be stored by the storage means,
- the digitalization followed by the encryption of the information affixed to the identification support,
- the transmission of the encrypted information to the receiving means and having said information stored by the storage means, and

- on each identification of the person, the receiving by means for reading the information stored by the storage means of the electronic chip fixed on the identification support allocated to the person, the decryption of this information and comparing this information with the information affixed on the identification support.

The method of the invention thus makes it possible, via simply comparing the information stored in the chip and the information appearing on the identification support, to detect any falsification of the latter. Moreover, it makes use of an advanced technological electronic chip. Thus, it is impossible to produce or falsify it using current means, such as printing means. The invention is therefore able to accurately and safely identify a person.

Advantageously, the identification information stored in the electronic chip includes the digitalized image of an identity photograph or a fingerprint, this image being processed before being encrypted by an image compression algorithm.

Thus, access to the electronic chip concerning writing and reading implies a knowledge of both the encryption algorithm and the used image compression algorithm.

According to one particular characteristic of the invention, the information is stored by the storage means of the electronic chip according to a predefined organisation which is required to know so as to read the stored information.

As previously mentioned, the present invention also concerns an identification device able to implement the method, said device including a thin paper, or carton-backed paper or plasticized paper, an electronic chip of the 'no contact' type integrating transponder type transmission means and storage means coupled to said transmission means, the latter including connection means so as to be connected to a transmission antenna, the thickness of the chip being extremely small so as to be able to be incorporated in the support without revealing any significant excess thickness.

Advantageously, the antenna has the shape of a coil whose spires are silk-processed onto the sheet of carton paper, the chip being fixed on the paper sheet via the welding of connection means on the connection terminals of the antenna.

In this way, the connection of the chip to the transmission antenna ensures at the same time fixing of the chip onto the sheet.

One non-restrictive example of an embodiment of the device of the invention is described hereafter with reference to the accompanying drawings on which :

Figure 1 represents a system for implementing the method of the invention ;

Figures 2 and 3 represent in the form of block diagrams the chaining of the various stages of the method of the invention ;

Figure 4 represents an electronic chip used to implement the method of the invention.

The method of the invention makes it possible to embody a device for identifying a person and appearing in the form of a paper, carton-backed paper or plastic badge support on which a photograph and/or fingerprint are affixed and on which identification information of said person is printed. Incorporated in this support is a transponder chip to be described subsequently with reference to figure 4 and including calculation means, such as a microprocessor heart, a memory and no-contact information receiving and transmission means.

Figure 1 represents a system for implementing the method of the invention and includes a computer 1 connected to data entry means 4, such as a keyboard with a display screen 3, a printer 6, an image digitalization device 2, such as a scanner, and a transponder chip reading device 7 of, for example, the 'no contact' type.

When the system is not merely used to carry out identity controls but needs to embody an identification support in accordance with the method of the invention, the reading device 7 comprises writing means able to transmit information to a transponder chip incorporated in the identification support.

Figure 2 shows the various stages for embodying an identification device according to the invention.

The method of the invention uses, for example, an image 8 making it possible to identity a person, such as an identity photograph and/or fingerprint. In the first stage 11, this image is first of all digitalized with the aid of the digitalization device 2. The digitalized image obtained then is subjected in the stage 12 to a compression processing which, without significantly altering the quality of the image, enables it to be stored in a relatively low capacity digital memory. By using current image compression techniques, it is possible to store an identity photograph on a several hundred of octets with only a slight loss of image quality.

At the same time, the identification information 9 concerning the person, such as civil status information (name, forename, date and place of birth) and anthropometric information (sex, size, colour of eyes) is introduced into the computer 1 (stage 16) which combines and organises this information with the image information according to a pre-established order (stage 13) and applies to them an encryption algorithm (stage 14). The organised and encrypted data is then transmitted to the chip 30 incorporated in an identification support 10 so as to be stored. Furthermore, the information 9 introduced in stage 11 is printed on the support 10 (stage 17).

It is to be noted that stage 14 can be carried out prior to stage 13 which can, according to the encryption algorithm used, render even more difficult access to the information stored by the chip 30.

Figure 3 shows the operations carried out at the time of an identity control of a person having an identification support 10.

In stage 22, the reading device 7 orders the transfer of the information stored in the transponder chip 30. This information is then transmitted to the computer 1 so as to be decrypted (stage 23) and analysed so as to separate the identification information from the information relating to the digitalized image. The image information is decompressed (stage 24) and then displayed on the display screen 3 with the identification information (stage 26). The operator carrying out the identity control can then verify that the printed information and the photograph appearing on the identification support 10 clearly correspond to the information shown on the screen 3.

According to one particular characteristic of the invention, the encryption algorithm used is of the encryption key type, the key selected being the series number of the chip 30 which is unique and stored permanently by its storage means. The encryption 14 and decryption stages 23 then comprise a prior operation for reading the series number of the chip using the reading means 7.

Furthermore, it is possible to automate the verification operations by digitalizing using a scanner 2 the photograph 8 affixed to the support 10 and the information printed and by having the photo and information processed by a character recognition software (stage 21). It then merely suffices to carry out in stage 27 a comparison between the information read on the chip 30 and the information derived from digitalization and indicate on the display screen 3 if differences have been detected.

At the same time, the information, including the image data read in the transponder chip 30, can be compared with the identification information of the persons concerned stored in a data base 41 accessible on the computer 1.

On figure 4, the transponder chip 30 includes a storage module 34 and a transmission module 32, the latter being connected by connection means 35 to an antenna 33. The storage and transmission module can be fixed on an extremely thin flexible film 31, such as a plastic film made, for example, of polyester. Thus, in the case of a transponder chip with a 126kbit storage capacity, the thickness of these two modules does not exceed several tenths of a millimetre. This capacity is fully compatible with the size of the digital image to be stored, having regard to the current performances of image compression techniques.

As previously mentioned, the chip 30 includes a microprocessor used to manage and control the transfer of data between the memory 34 and the reading and writing device 7. Thus, the microprocessor is able to allocate one or several access keys to the unit or to certain portions of the memory 34 and totally block access of the chip after a certain predefined number of access attempts using an erroneous key. In this way, it is impossible for an unauthorised person to copy the contents of a chip and transfer it to another chip.

The microprocessor of the chip 30 is also programmed to manage collisions, that is the simultaneous transmissions between a reader and several chips.

Moreover, in the case of induction chips, the transmission antenna 33 appears in the form of a coil enabling the reading and/or writing device 7 to feed the chip 30 with energy via induction, the magnetic field applied to the coil being modulated so as to transmit the information.

The transponder chip used by the invention advantageously uses a transmission frequency of several MHz so that the coil 33 only comprises several spires which can be formed on the film 31 by means of a simple printing or silk printing method, the connection means 35 appearing in the form of pellets placed directly on the silicon substrate of the chip, said pellets being welded to the connection blocks of the antenna, also embodied by printing or silk process printing on the film 31, the connection to the antenna ensuring at the same time that the chip is kept on the film 31.

The pellets are preferably embodied in a conductive glue.

In addition, it is possible to glue a paper sheet onto the film 31 so as to cover and mask the other face of the chip 30 and the antenna 33.

The film 31 may be a polyester film having a thickness of about 100 µm so that the thickness of the unit constituted by the support and the chip does not exceed 300 µm.

In this way, the chip 30 and the film 31 on which the antenna 33 is printed or silk process printed can be mounted in the form of a sandwich between two ordinary or protected paper sheets without forming any significant excess thickness, the paper sheets supporting the printed identification information and possibly the identity photograph and/or a fingerprint.

It is to be noted that the used transmission frequency makes it possible to obtain a relatively high transmission flowrate. As a result, the reading of the information stored by the chip can be carried out almost instantaneously.

CLAIMS

1. Method for the security identification of a person and including the affixing of identification information of said person on a thin flexible support, such as paper, carton-backed paper or plastic film, this support being allocated to said person, and the reading of this information, said method being characterised in that it includes :

- the fixing onto the identification support of a thin electronic chip (30) including storage means (34) and no contact transmission and receiving means (32) respectively so as to transmit the information stored and receive the information to be stored by the storage means,
- the digitalization (11, 16) and then encryption (14) of the information affixed to the identification support (10),
- the no contact transmission (15) of the encrypted information to the receiving means (32) and having said information stored by the storage means (34), and
- on each identification of the person, the receiving (22) by reading means (7) of the information stored by the storage means (34) of the electronic chip (30) fixed on the identification support (10) allocated to the person, the decryption (23) of this information and comparing (27) this information with the information affixed on the identification support.

2. Method according to claim 1, characterised in that the identification information stored in the electronic chip (30) include the digitalized image of an identity photograph (8) and/or a fingerprint, the method further including processing (12) of the digitalized image by an image compression algorithm before said image has been encrypted (14).

3. Method according to claim 1 or 2, characterised in that, prior to encryption (14) of the identification information, it includes a stage for reading a series number of the chip stored by the storage means (34)in such a way as to be unable to be altered, this series number being unique, and during decryption (23) reading of the information stored by the chip before reading of this series number.

4. Method according to one of the preceding claims, characterised in that at the time of identifying a person, it includes the digitalization (21) of the information affixed to the support and having a computer (1) comparing this information with that derived from the chip incorporated in the support.

5. Method according to one of the preceding claims, characterised in that, at the time of identifying a person, it includes comparing the data read with a set of identification information of particular persons sought after, said set being stored in a data base (41).

6. Method according to one of the preceding claims, characterised in that the identification information is stored on the chip (30) according to a predefined organisation needed to be known so as to be able to read this information.

7. Device for identifying a person for implementing the method according to one of the preceding claims, characterised in that it includes a thin flexible support made of paper, carton-backed paper or a plastic film, a no contact electronic chip (30) integrating transponder type no contact transmission and receiving means (32), and storage means (34) coupled to the transmission and receiving means and in which the person identification information means are stored, the transmission and receiving means including connection means (35) so as to be connected to a transmission antenna (33), the thickness of the chip being extremely small enabling it to be incorporated in the support without allowing any excess thickness to appear.

8. Device according to claim 7, characterised in that the chip (30) is of the induction type, the transmission antenna (33) appearing in the form of a coil which enables the reading and/or writing device (7) to feed the chip (30) with energy via induction, the magnetic field applied to the coil being modulated so as to transmit the information.

9. Device according to claim 7 or 8, characterised in that the chip (30) advantageously uses a transmission frequency of several MHz so that the antenna (33) appears in the form of a coil comprising only a few spires which are formed on an extremely thin flexible support by means of a printing or silk-process printing method, the connection means (35) appearing in the form of pellets integral with the chip welded onto the connection terminals of the antenna, also embodied by a printing or silk-process printing method, the connection to the antenna ensuring at the same time that the chip is kept on the film (31).

10. Device according to one of claims 7 to 9, characterised in that the chip (30) includes calculation means which only authorise access to all or part of the storage means (34) if the transmission and receiving means (32) receive a corresponding predetermined key.

11. Device according to one of claims 7 to 10, characterised in that the film (31) with the chip (30) and the printed or silk-process printed antenna (33) are sandwich-mounted between two ordinary or protected paper.

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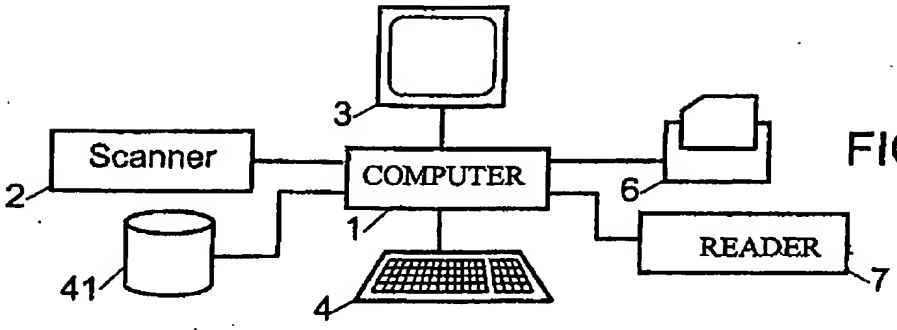

FIG. 1

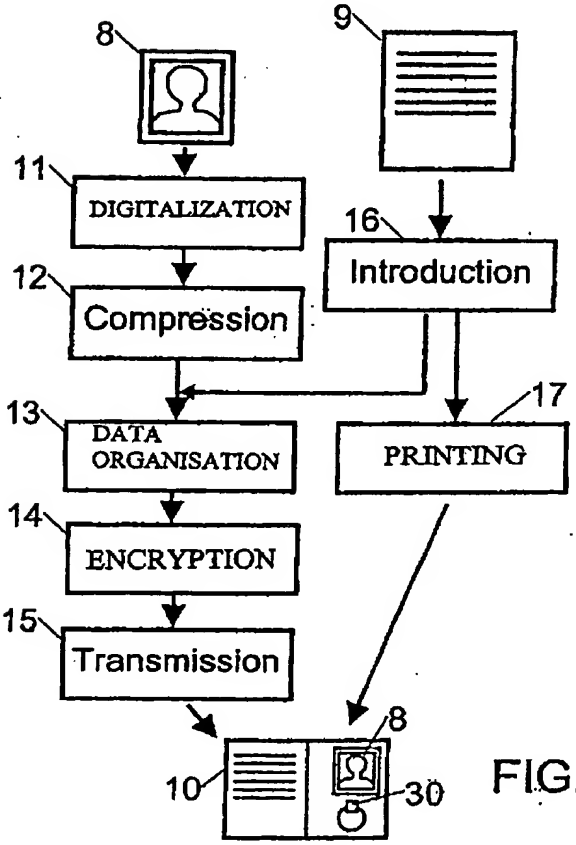

FIG. 2

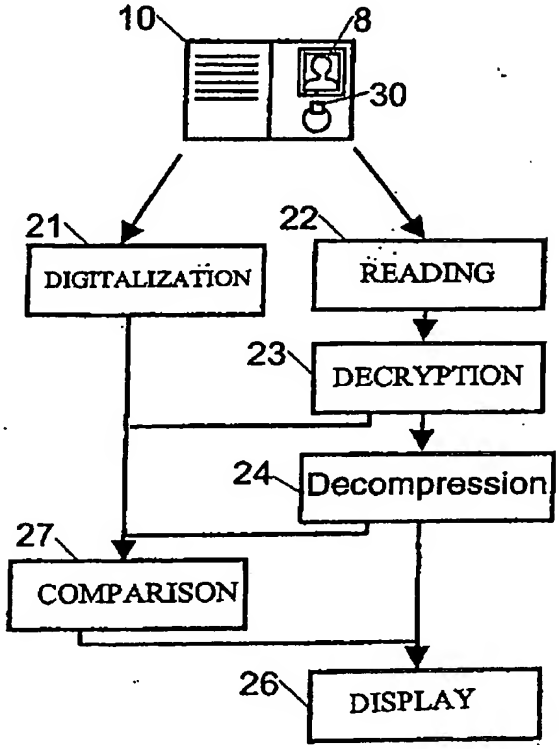

FIG. 3

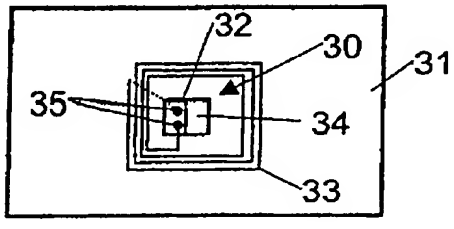

FIG. 4